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A  
T R E A T I S E  
ON THE  
Synochus Icteroides,  
OR  
Y E L L O W F E V E R ;

AS IT LATELY APPEARED IN THE

CITY OF PHILADELPHIA.

EXHIBITING

A CONCISE VIEW OF ITS RISE, PROGRESS AND SYMPTOMS,  
TOGETHER WITH THE METHOD OF TREATMENT  
FOUND MOST SUCCESSFUL;

ALSO

REMARKS ON THE NATURE OF ITS CONTAGION, AND DIREC-  
TIONS FOR PREVENTING THE INTRODUCTION OF THE  
SAME MALADY, IN FUTURE.  
*27132*

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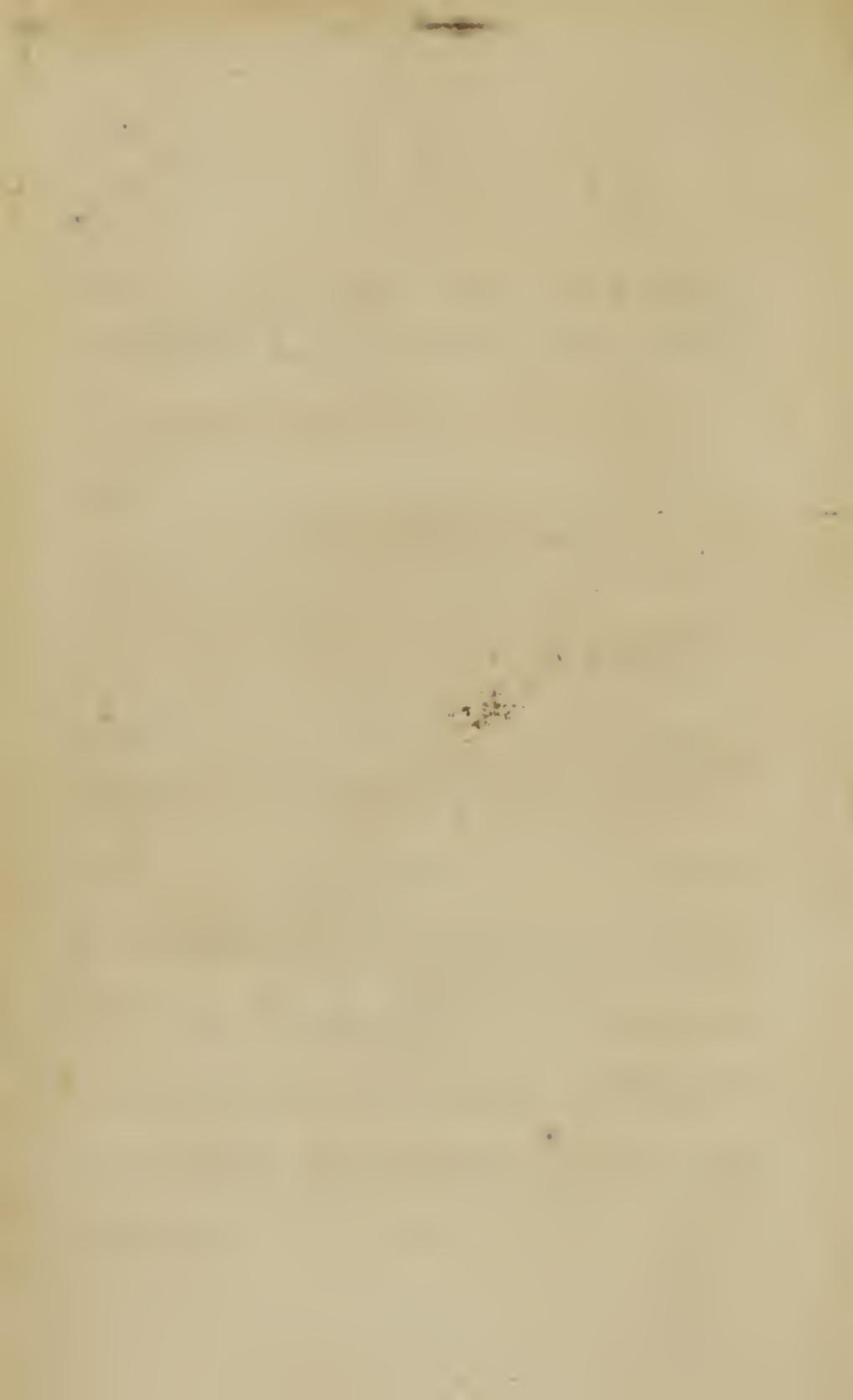
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PHILADELPHIA:  
PRINTED BY THOMAS DOBSON, No. 41, SOUTH  
SECOND-STREET.

M,DCC,XCIV.

1794



HIS EXCELLENCY  
THOMAS MIFFLIN,  
Governor of Pennsylvania.

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SIR,

NOT the splendor of your station, but the qualities of your heart, so conspicuously displayed during the prevalence of the late destructive malady in this city, induce me to inscribe the following treatise

treatice to your excellency. You are therefore requested to accept it; not as a compliment, but as a tribute to which you are justly entitled, from

Your most sincere,

And very humble servant,

THE AUTHOR.

PHILADELPHIA, }  
*January 20th 1794.* }

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# P R E F A C E.

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AS every invention, discovery, or improvement, is more or less useful and interesting, in proportion as it contributes to the preservation of health, life, prosperity, and satisfaction; and as the author of the following pages is persuaded, that very material improvements were made in the treatment of the synochus icteroides or yellow fever, which lately prevailed in this city, and proved so destructive and distressing to its inhabitants, he thinks it his duty to lay the same before the public, together with his observations and sentiments on other circumstances, relative to that disease; that if it should ever appear here again (as there is too much reason

son to apprehend, unless much caution is observed to prevent it, from our constant intercourse with the West Indies, where strangers are seldom long exempt from it) physicians may not again be at a loss for a directory, derived from actual experience and observation. He however does not pretend to have been the improver of the treatment, or the discoverer of the means most effectual in the cure, which is recommended in the following pages. On the contrary, he believes they were adopted from the joint deliberations of the college of physicians, in consequence of some of its members having observed their good effects when the disease first appeared, and was mistaken for a *higher grade* of the bilious remittent fever of the autumnal season. Instead of attending to systematic arrangement in the following little production, he has contented himself with enumerating symptoms and circumstances as they occurred to him, while engaged in practice; and offering his sentiments in the order in which they happened to arise.

By

By this method he hopes to escape the imputation of pedantry : and though those who prefer the studied and formal arrangement of the schools, to the simplicity and order of nature, may condemn his manner, he hopes the matter it contains, and the importance of the subject, will secure him the approbation of all those who prefer utility to formality and fashion. To men of taste indeed, some apology is due for the imperfections of its style and composition ; but if want of leisure and frequent interruption are ever admitted as an apology for a trespass of this nature, he is certainly entitled to some indulgence on the present occasion ; especially as he can assure them, that truth has been his aim, his end the public good.

JANUARY 24th, 1794.



A

S K E T C H  
OF THE  
RISE AND PROGRESS  
OF THE  
D I S E A S E.

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THE disease which we are about to describe, made its first appearance in Water street between Mulberry and Sassafras streets, the beginning of August 1793, and appears to have been imported by a vessel which arrived in this port, and lay at a wharf in that neighbourhood the latter end of July.\*

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From

\* See Mr M. Carey's account of the rise and progress of the disease, lately published.

From this source it spread gradually by contagion over the greatest part of the city ; and was more or less rapid in its progress, according as people had more or less intercourse with the sick, and according as the weather was more or less cold : for though it was propagated by contagion, the sensible qualities of the atmosphere had a surprising effect in rendering the contagion more or less active, as well as in its influence on the symptoms of those labouring under the disease.

The greatest number confined with the disease, was about the middle of October ; but as the weather became cold and frosty, its declension was so rapid that it appeared as if extinguished by a miracle : for by the tenth of November, there was scarcely a person to be found with it.

The whole number that died of this disease in the city, appears from the registers of deaths kept by the different religious societies, to have been

been about 3500. In the registers of the deaths which have been kept by those societies, there is no discrimination made between those who died of the yellow fever and of other diseases ; and the whole number of deaths appears to have been 4048, from the 1st of August to the 10th of November ; of which above 500 are supposed to have died of other diseases. At one period there appears to have been more than eight thousand persons confined by it at the same time ; though at that time near twenty thousand of the inhabitants had retired from the city.

That the long continuance of heat and drought which preceded this disease had no share in its generation, is certain, from its being confined for some time to that part of the city where it commenced : for almost every case which occurred for the first week or two, could be traced to that source, and was propagated to others in succession.

This fever corresponded in most of its leading and characteristic symptoms, with the synochus icteroides occidentalis, or yellow fever of the West Indies. A fever of the same kind has prevailed here three times before, viz. in the years 1740, 1747 and 1762.

In the year 1740, it was introduced by means of a trunk of wearing apparel, which had belonged to a gentleman who died of it in Barbadoes. The family to whom the trunk was sent first took the disease; and from them it spread into the town, and destroyed above two hundred people; as we are informed by the celebrated LIND, in his treatise on fevers and infection.

The only account I have been able to obtain respecting its appearance in 1747, is what is contained in Mr Lardner's letter, of which the following is a copy.

PHILADELPHIA, Sept. 3d, 1747. (O. S.)

“ SINCE my last, a contagious fever has raged amongst us, which admits of no relief, cure, or abatement ; never intermitting to the last moment of life. It has carried off three of my most intimate acquaintance ; among which are my dear friends Andrew Hamilton and Mr Currie. Philadelphia has been a melancholy place, and many whose business and family would permit them, have fled the city. But the air is now become much cooler, and those under the disorder revive. The symptoms (a pain in the head and back, vomiting, &c.) are less violent, and the fever gradually abates. Meffrs. Allen and Turner’s family are yet under the disease ; the one having lost a near relation, and Mr Allen himself not out of danger.

“ September 24th. The yellow fever is still amongst us : yesterday was buried young Samuel Powell who died of it.”

It is astonishing that the physicians of that time left nothing on record respecting so destructive a malady. Perhaps if the notes of Doctors Zachary, Graham, Kearsley, and Cadwallader were inspected, some important facts might yet be discovered. Dr Griffiths' mother who had the disease at that time is still alive.

The third time of its appearance it was introduced (according to the notes of Dr Redman of this city) about the latter end of August, by a mariner from the Havanna : it came to its height about the 25th of September, and from that time gradually declined, and was entirely extinguished by the middle of October. Neither the state of the weather, nor the number of deaths which occurred at that time, are known, no register having been preserved.

The fever at that time was circumscribed to Pine or Union street Northerly, and three or four squares from thence Southerly, and extended

extended from Water street, to Third or Fourth street Westerly. Its first and greatest ravages were about the New Market, which lay near the source where the disease originated. It spread at that time, as the one we are about to describe did, from family to family, as they happened to have intercourse one with another.

A fever of the same kind, also prevailed at Charleston, South Carolina, in the years 1732, 1739, 1745 and 1748; an account of which has been given by Dr. Lining, and published in the second Vol. Physical and Literary Essays of Edinburgh. The disease each time that it prevailed in Carolina, was traced to some person lately arrived from some of the West India Islands,

We are also informed by Dr Lind, in his treatise on hot climates, that a similar disease occurred in Cadiz, in Spain, the latter end of the summer of 1764, of which an hundred persons

persons sometimes died in a day ; that its ravages were at that time entirely confined to that city, and that those who retired to the country escaped it.

Though the disease we are about to describe was highly contagious, the influence of the contagion was circumscribed to a narrow sphere, for none but those who approached near to the sick, or to such articles as had been in contact with them, or within the sphere of their effluvia so as to be impregnated thereby were affected.

All that shut themselves up in their houses, retired into the country, or avoided entering into infected houses, and all intercourse with the sick, or infected substances, or with those who visited the sick (for the idle curiosity of servants, particularly of the hired girls, was the means of propagating the disease more than any other circumstance), though constantly abroad in the open streets, escaped the disease

disease without exception. The prisoners in the jail and work house—the pensioners in the poor house, and the patients and attendants at the hospital, from whence all intercourse with the infected was excluded, also entirely escaped the disease.

There was something however, in the state of the atmosphere in the city, or in the constitutions of the inhabitants, peculiarly favourable to the operation of the contagion, very different from that of the country; for when any person with the disease was removed a few miles into the country, and even died of it, there is scarce an instance of its having been communicated to any person in the same house, whereas when any one in a family took it and remained in the city, others, and sometimes the whole of the family, soon after took the disease\*.

Those

\* This was also the case the last time it occurred at Charleston, as recorded by Dr. Lining—and also at Cadiz in 1764, mentioned by Lind,

Those exposed to the contagion generally began to be affected between the third and eighth day; we recollect several that were certainly attacked on the fifth day, one on the third, and two not till the tenth day after exposure. These were ascertained by such circumstances, as could not have deceived us. Those who had retired into the country, and again returned to the city during the prevalence of the disease, were affected more readily and earlier than others, after such exposure.

The state of the mind seems to have had great influence, in hastening or retarding the effects of the contagion; those under the influence of fear, which was the case with the majority, were sooner affected after exposure to the contagion, than those who were less concerned. Every other debilitating power had a similar affect, such as an abstemious regimen, too much fatigue, frequent purging, blood-letting, and exposure to the night air, without

without exercise sufficient to keep up a vigorous circulation. But a lax state of the bowels, and a moderate tone of the solids, appear to have contributed to render the disease more mild when it did attack those who were not greatly under the influence of terror. Neither age nor sex were exempt, not even infants at the breast—but those that were fat, corpulent and indolent, were most susceptible of the contagion, and suffered accordingly.

While this formidable disease was making such ravages in the city, the country for some miles around was never more healthy, especially in dry and elevated situations. In the low and marshy grounds, indeed, this was not the case; for at Harrisburgh on the Susquehanna, at Dover on the Delaware, and a few other places, bordering on rivers or large creeks, whose channels were almost exhausted of their waters, by the long continuance of heat and drought, bilious fever, choleras, dysenteries and cholics, were never known to be so prevalent and mortal.

The French West Indians, particularly those from St. Domingo, who had taken shelter here, from the storms of a sanguinary war, almost to a man escaped the disease, though they made no use of any precaution for the purpose; while those from France were as liable to it as the Philadelphians.

The reason that the West Indians were not liable to it, is perhaps owing to the resemblance of the season to that of the climate from whence they came; and to the effects produced by the frequent excretions of bile to which they are particularly subject, rendering the duodenum and biliary ducts insensible to the poison. For it is a singular though a notorious fact, that the disease seldom or ever affects any but strangers or new comers from a colder or more temperate climate, in the West Indies; as we are informed by almost all the writers on the subject. But we were strangers or new comers to it to all intents and purposes, with this difference, that it was brought to us instead of our and

being taken to it ; and for that reason were subject to its influence. There are however some instances mentioned by Hillary of its being communicated by contagion at Barbadoes, and of a few Creoles being affected by it. But this he says was very rare, and after the disease had become very malignant.

\* The negroes that were natives of America

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\* The latest writer on this subject, Dr Jackson, informs us that no negro immediately from the coast of Africa has been known to be attacked by this disease ; neither have Creoles that have resided constantly in the Islands. Yet Creoles or Africans who have been absent a considerable time, and resided in colder climates, whether in Europe or the higher latitudes of America, are not by any means exempted from it when they return to the Islands. Europeans, particularly males, suffer from it soon after their arrival in the Islands ; but in general, after residing there a year or two, they are very rarely attacked by it. Nor has it scarcely ever been known to attack the same person twice, except accidentally, after his return from a different and colder climate. The remitting fever, on the contrary, attacks persons of all descriptions, whether natives or foreigners. Nor are those who have once had it exempt from its future attack : a fact which proves

ca were also liable to it, though not in the same proportion as the whites. This was not the case, according to the observations of Dr Lining, when it prevailed in Charleston ; for at that time there was not an instance of any negro being affected by it, though as much exposed to the contagion as the whites. This with some exceptions, is also the case with respect to the negroes in the West Indies ; tho' Dr. Blane says he saw a black woman die with all the symptoms of it at Barbadoes, having caught it from nursing some seamen that were ill of it. The same author is of opinion, that the disease cannot be generated in any place,

proves that there actually exists some essential difference between the two diseases ; or at least it shews, that the revolution of a season or two destroys in the constitutions of foreigners, a certain aptitude or disposition for the one disease, which it still retains for the other. Perhaps this may be principally owing to the effects produced on the biliary ducts and duodenum, by the frequent and copious secretion of bile, to which the inhabitants of Tropical climates are particularly subject ; whereby they are rendered insensible to the contagion of this disease.

place, unless the heat has been for some time above 75 degrees. It is asserted by Dr Lining, that those who have once had the disease, cannot take it a second time : but we have seen several instances of its occurring a second time here, where the circumstances were so unequivocal, that it could not be fairly ascribed to a relapse.

As soon as the contagion had reached the central part of the city, the disease spread with astonishing rapidity. In the course of August, there were more than 300 funerals ; towards the close of the month, twenty were buried of a day. During the greatest part of this month, the mercury in the thermometer ranged from 80 to 90°, in the afternoons ; the sky generally clear, and the winds Westerly. From the 25th to the end of the month the weather was cloudy, and a small quantity of rain fell.

In September, the disease increased amazingly.

zingly. In the course of the month, about 1400 citizens were added to the list of mortality; towards its close, from 50 to 90 were buried of a day, though the mercury now seldom rose above 80°. The weather was mostly fair; a few days were cloudy, but there was no rain. The wind still westerly. Throughout the month the heat was generally moderate, and the weather uniform, except from the 19th to the 23d, when it was unusually calm, "deprived of the refreshing breeze," during which the mortality was greater than at any other period in that month.

From this time to the middle of October, the disease proceeded with an increase of mortality, owing to the enlargement of the circle of contagion. From the 1st to the 17th, more than 1400 fell victims to the malady—but from the 17th, to the 1st of November, the bills of mortality lessened rapidly, though not regularly. The whole number of the deaths in this month, amounted to near 2000,

though one third of the inhabitants had for some time before deserted the city, and retired into different parts of the country, as choice or chance directed.

The thermometer was very variable all this month, generally below  $80^{\circ}$ , but above  $50^{\circ}$  until the 27th, from which time to the end of the month, it was always below  $50^{\circ}$ , and one day below  $40^{\circ}$ . The weather for the most part fair, though some rain fell on the 12th and 31st, and it was cloudy from the 25th to the end of the month. The wind generally from the N. and N. W. till the latter end of the month, but from that time N. N. E. Towards the last of the month, the contagion declined apace, the funerals being reduced to between 12 and 20 a day. From this time the weather became more wet, cold and frosty, and the disease declined so rapidly, that on the 9th of November, the funerals in all the grave yards only amounted to six. From this time every thing seemed to

sink into that kind of placid calm, which generally succeeds a dying storm. The citizens who had retreated from the danger, now ventured back, and the streets and various departments of business, immediately resumed their former life and energy—commerce again spread her white wings, and pensive mourning melancholy, has since given place to the cheerful face of joy.

D E F I-

## DEFINITION.

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The SYNOCHUS ICTEROIDES OR YELLOW FEVER, derives its name from the inflammatory symptoms, with which it begins, becoming putrid in its progress; and from the yellowness in the eyes and skin, with which it is generally accompanied.

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## DESCRIPTION

OF

## S Y M P T O M S.

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THE disease (whose symptoms are now to be delineated), was generally preceded by a slight indisposition, such as muscular debility, and sense of lassitude, on exercise or motion, drowsiness, slight pain and giddiness in the head, pain in the back and loins, defec-

tive appetite, dyspeptic symptoms, such as flatulent eructations, loss of appetite, &c. After this prelude, which seldom continued more than 6 or 8 hours, and sometimes without any such prelude at all, a chilly fit, alternated with glowing flushes of heat, came on, generally in the after part of the night, or fore part of the day; which, after a duration, for the most part short, though sometimes of 12 or 14 hours continuance, gave place to those symptoms which designate a confirmed fever of the inflammatory type, which increased in violence as the day advanced; and continued with little or no variation, till towards morning, when some alleviation with respect to violence was generally observable, but in scarcely any instance was there so much abatement as could be properly called a remission.

The pulse, after the feverish state became established, was generally quick and tense, and during the exacerbation, it was also full  
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and strong. In the carotid and temporal arteries in particular, it was strong and throbbing ; respiration hurried ; the skin very hot and dry ; and the face highly flushed ; the eyes remarkably red, hot, and painful, as if irritated by small grit or sand ; accompanied with a torturing pain in the head, back, loins, and large joints, shooting from temple to temple, and extending from the loins to the hips and down the thighs ; the thirst considerable, but not insatiable ; the tongue white, moist, and clammy ; the bowels either costive, or discharging thin, watery, and sometimes bloody, stools ; the urine high-coloured, cloudy, and small in quantity ; the stomach distended, painful, tender, and irritable, especially after taking any kind of drink or aliment ; frequently affected with sick qualms, and more or less propensity to puke, but seldom bringing up any thing ; a sense of stricture and oppression at the precordia, as if tight bound with a belt ; great restlessness, with moaning and sighing ; and frequently shifting of posture in search of ease ;

some

some confusion of the intellects, attended with constant pervigilium ; but seldom so much derangement of the reasoning faculty as to amount to violent delirium ; frequent hemorrhages from one or both nostrils, during the afternoon exacerbations in young persons of both sexes ; and in those of one of the sexes at two different periods of life. In some the head was most affected ; in others the stomach. In persons under puberty, symptoms of hydrocephalus internus frequently occurred in the course of this stage. In men verging on old age, the disease usually began with symptoms resembling apoplexy, unless prevented by a discharge of blood from the hemorrhoidal vessels.

When stools were procured by art, the first were generally soft and white, but seldom bilious. The contents thrown out from the stomach were generally the drinks or aliment last received. Sometimes mixed with matter of a sea-green colour and bitter taste, but often

ten without either. The suffusion and inflamed appearance of the eyes, constantly increased in proportion to the violence of fever and date of the disease.

The preceding symptoms which may be considered as limiting the first stage of the disease, continued with more or less violence from one to three days, and sometimes longer ; and then abated suddenly, succeeded soon after by the appearance of a yellow tinge in the eyes, face, and neck, or by a copious evacuation of bilious matter by stool ; and the patient speedily recovered, except that his stomach remained weak, and his appetite defective for some time : or no bilious stools taking place at the time, or soon after the icterous appearance became observable, the disease proceeded to the second stage, in which there was a diminution of force in some of the symptoms ; an increase in others ; and an accession of new ones. The inflammatory symptoms which before, in many respects resembled those of the *idiopathic gastritis*,

*tritis*, now became mixed more or less with symptoms of nervous affection. The pulse though still quick, was no longer full or tense ; the respiration also continued quick and hurried ; and the skin, though less hot, was more dry and parched, except during the act of vomiting, and then the moisture was only partial, chiefly about the neck and forehead. The tongue now appeared more dry and foul, particularly in the middle ; the thirst became insatiable ; the stomach so irritable, and the reaching and propensity to puke so constant, that nothing could be retained on it, but was cast up the instant it was swallowed, accompanied with violent straining and noise ; but the matter thrown up appeared very little if any changed in appearance, except being mixed with mucus and more ropy than when drank : the stomach was also constantly affected with a constant burning heat, which occasioned the most excruciating agony and distress. The anxiety at the precordia also hourly increased, and soon became insupportable torture : the sighing, restlessness,

lessness, and tossing to and fro became perpetual ; the eyes and countenance were expressive of the deepest anguish and despair ; and a delirium resembling mania was by no means uncommon. As these symptoms became more distressing, the yellowness which before was faint and partial, assumed a deep orange or saffron colour, and extended itself over the whole surface of the body ; so that the patient resembled one with an obstinate and inveterate jaundice. When these symptoms had continued with increasing violence to the end of the second, or beginning of the third, day, sometimes earlier, and sometimes later, they all suddenly vanished, and left the patient for a time perfectly easy and tranquil. But this fallacious truce, so flattering to the inexperienced, as well as to the patient, was soon succeeded by a different, and though less acutely painful, more hopeless and desperate train of symptoms, which marked the third and last stage of this domestic tragedy. The whole surface of the body now became of a cadaverous coldness,

ness, with the pulse slow and soft, in some not exceeding 40 strokes in a minute, but as regular as in health. The respiration was slow and deep ; and the yellowness of the eyes and skin appeared of a deep tawny or dull copper-colour ; the tongue much cleaner and moister than in either of the former stages ; the vomiting was also less frequent, but in a much larger quantity when it did occur ; and the patient always had some respite after emptying his stomach, till a large quantity of fluid was again accumulated ; when it was again spouted up in an enormous quantity, and generally of a dark colour and turbid consistence, resembling coffee-grounds ; and when stools occurred at this time, they generally had the same appearance ; but sometimes resembled tar or molasses. The patient was generally at this time affected with a kind of cheerful delirium, imagining himself well : he could seldom be retained in bed, but walked about till exhausted with fatigue. The delirium was generally succeeded, the day following, or the day after,

by

by coma, from which the patient was occasionally roused by vomiting and uneasy dreams ; and when roused, started up, and attempted to get out of bed ; and when prevented, immediately sunk down again into a state of slumbering insensibility ; and if asked, when roused from his coma, how he did, his constant reply was “ very well ! ” As the debility increased, the face and breast became spotted, as if sprinkled with ink ; and a deep dusky yellow and purple colour, resembling blood settled in a bruised part, pervaded the whole surface of the body. The respiration now became deep and slow, frequently interrupted by a sobbing kind of sighing and constant hiccup. These were succeeded by dimness of vision—difficulty of swallowing—loss of speech—rattling in the throat—short and convulsive breathing—sunk and irregular pulse—cold sweats—and finally death.

But in more protracted and less violent cases, instead of the black vomiting and coma,

ma, the patient frequently became affected with symptoms resembling those which are commonly met with in a protracted and inveterate scurvy: In these the countenance appeared bloated and livid, as well as yellow, and blood perpetually oozed from different parts of the body; particularly from the nose, gums, and hemorrhoidal vessels. Some had aphæ or superficial ulcerations, in the roof of the mouth, and in the throat, and parts which had been blistered; and some had a frequent vomiting, or rather gulping up of dark grumous blood from the fauces and stomach, or a discharge of it by stool. Several in this situation, lived many days without any other morbid appearance, except a constant and distressing watchfulness; sitting up or walking about constantly, but without any appetite or extraordinary thirst, or apparent delirium; till, exhausted by a sudden hemorrhagic discharge, or by a more gradual drain of blood, they sunk insensibly into the arms of death, without a struggle or a groan.

When

When the disease terminated favourably, it was generally before the fifth day, frequently on the second or third; and when it terminated fatally, it was generally on the fourth, fifth, or sixth day; sometimes earlier and sometimes later; but when the patient survived the seventh day, without the accession of the black vomiting, coma, or scorbutic symptoms, or great and increasing debility, the disease generally terminated favourably.

This was the most usual appearance and progress of this formidable and too often fatal disease, through its several stages. But there were very surprising variations in the appearance it assumed, both in respect to the duration of the several stages, and the state of the symptoms, according to the particular constitutions and temperaments of different patients, the state of the weather, the manner of treatment, &c.

A sketch of these we shall now proceed to enum-

enumerate. In some cases signs of debility in all the functions, and a putrescent tendency in the whole system, were apparent at a very early period of the disease. In these cases the anxiety at the precordia was constant, the sighing frequent—the yellowness of the eyes and skin became conspicuous very early—the exacerbations and remissions of fever scarcely perceptible—the pulse quick and weak, skin dry and parched, restlessness and pervigilium great, vomiting constant, and on the second or third day of a black colour—the stools also black and gelatinous—the stomach constantly affected with a violent cardialgia, or a burning heat, which the miserable sufferer said felt as if scalded or burnt by a coal of fire; no posture gave ease, and whatever was swallowed, except very small draughts of toast and water, weak barley water, or simple spring water, increased the agony to the most exquisite torture. It was in this form of the disease, that the method published by Dr Kuhn, particularly applied. And it was the form

in which the disease most frequently appeared all the month of August.

In other cases the generality of the symptoms resembled those of the autumnal remittent, combined with jaundice—and in some no yellowness or black vomiting occurred at all; but in these the eyes were almost always highly inflamed for a day or two, but when a diarrhœa, accompanied with a discharge of bile spontaneously occurred, or was procured by purgatives or glisters, the yellowness or icterous appearance was frequently prevented.

It was often difficult to distinguish this disease at the beginning from the influenza, which was prevalent in the city, and spread over all the Southern states and over the Western territory, before the yellow fever had made much progress in the city. The influence of terror also occasioned great variation in its symptoms. That the usual disease of the season,

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the remitting fever, was often blended with this disease, is by no means improbable. For though two epidemics arising from a change or alteration in the sensible qualities of the air, or from any invisible miasma diffused abroad to a considerable extent in the atmosphere, cannot exist together, yet there is nothing more certain than that a contagious disease, and a disease depending on climate, season, and soil, may exist at the same time and in the same place. Of this we have several examples in the works of Lind, Russel, &c.

A preternatural discharge of bile, was by no means a common circumstance in any form or at any period of the disease, as has been already observed. Dissections made not only at Cadiz and the West Indies, but also in this city, demonstrate that this is owing to an inflammatory affection of the stomach, duodenum and ductus choledochus: And it is more than probable, that the black matter brought up by vomiting, was the sphacelated surface of those parts mixed with coagulated blood,

blood, bile, and the contents last taken into the stomach. The white colour of the stools so common in the beginning of the disease, also indicated an obstruction to the excretion of bile. When the fever was protracted, accumulations of bile frequently took place, as was evident from the tension of the right hypochondrium, and the foetid and copious discharges coloured with that fluid, which frequently appeared after an active purge.

Dr. Jackson relates that while he resided in Jamaica, between the years 1774 and 1782, he opened several persons who died of this disease, and observed that the stomach and intestines had a dirty yellow appearance, and were highly putrefied, and much distended with wind—the liver and spleen generally enlarged in size, and the colour of the liver often of a deeper yellow than any other part of the abdominal viscera—the gall bladder for the most part moderately full, and of a thick consistence and black colour—the biliary

ry ducts enlarged and filled with a similar fluid, while the vessels of the liver bore the marks of uncommon distention. A dark coloured turbid fluid was always observable in the cavity of the stomach, similar to that usually thrown up in the last stage of the illness ; and the villous coat of that organ was also abraded in various places, and at the same time, spots were observed on different parts of its surface, which appeared to be incipient mortifications. The superior portions of the intestinal canal, had also frequently a similar appearance. From these and other dissections, much light has been thrown upon the seat, and nature of this disease.\*

\* See Jackson on the fevers of Jamaica, p. 265.

## P R O G N O S I S.

## I N T H E F I R S T S T A G E.

*The favourable Signs were,*

HEMORRHAGES from the nose, with relief of the head during the exacerbations. A gradual reduction of the pulse, heat, and oppression at the precordia. A diarrhoea or laxative stools, mixed with bile coming on before the third day.

When in the decline of this stage, there was a constant retching to vomit, without bringing up any thing or vomiting the drinks only, accompanied with a burning heat and tenderness at the stomach, with pain or oppression; it was almost a certain indication that the yellowness, or bilious effusion, would

soon make its appearance. When the alleviation of the symptoms, especially of the oppression and weight at the precordia or epigastric region took place, and were accompanied with, or succeeded by, a bilious diarrhoea, it always afforded a favourable prognostic.

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### *Unfavourable Signs.*

STRONG, hard, and quick pulse, with ferocious delirium, and pervigilium ; or quick, small and irregular pulse, with low delirium, great muscular debility, exquisite pain at the stomach, oppression and sense of stricture at the precordia, great thirst, constant nausea and retching, and restlessness ; obstinate costiveness, and the stools when procured of a soft consistence, in lumps, and of a whitish colour. A want of action in the bowels, and great insensibility to purges and glysters, also gave room for much apprehension.

## IN THE SECOND STAGE.

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*The favourable Signs were,*

A N abatement of the vomiting, anxiety and oppression at the precordia—relief from the burning pain at the stomach—natural heat in the forehead and limbs, open bowels and natural coloured stools—turbid urine, &c.

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*Unfavourable Signs.*

A N increase of muscular debility, oppression, anxiety, incessant vomiting, a rapid increase of the icterous aspect, restlessness and frequent sighing, costiveness or bloody stools, accompanied with a painful tenesmus ; hollow eyes, shrunk countenance, and shrill feeble voice ; an obstinate and painful pervigilium ;  
the

the patient continuing wide awake, in a state of the most uneasy agitation, with his senses and reason but little impaired. But the symptoms expressive of the greatest danger were, an invincible irritability of the stomach, which prevented it from retaining any kind of drink, aliment, or medicines, and a gradual recession of heat from the surface of the body.

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### IN THE THIRD STAGE.

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#### *Favourable Signs.*

A GRADUAL return of heat to the surface of the body, cessation of delirium, and change of colour in the matter vomited up.

*Unfa-*

*Unfavourable Signs.*

ALMOST all the symptoms in this stage indicated a fatal event, particularly the sudden cessation of pain and fever ; coldness of the face and limbs, and the black vomitings, or black stools ; constant singultus, coma, and hemorrhagy ; a sense of great weight and stricture about the epigastric region ; deep and frequent sighing ; and great failure of strength denoted danger in every stage. When in this stage deep coma took place, it generally denoted a speedy dissolution.

OF THE  
M E T H O D  
OF  
C U R E.

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FROM the preceding account of the various forms in which the *synochus icteroides* appeared, the reader will at once perceive, that no one mode of treatment could be with propriety pursued ; but that it was requisite to vary it, as the symptoms indicated an inflammatory or putrid type, as well as to adjust it to the several stages of the disease. But in all cases which began with inflammatory symptoms, whether they ended in those which indicated putridity or not, the following treatment was found most certain and successful. Blood-letting

ting generally afforded relief in all cases, when the activity of the arterial system was evident ; and the head and epigastrum were at the same time much affected : and this operation was found serviceable when repeated every six or eight hours, for the first twenty-four or thirty-six hours after the establishment of the paroxysm ; and in every subsequent exacerbation so long as those symptoms continued in any considerable degree \*. To those who condemn bleeding under such circumstances, we may say with Sydenham, when speaking of the plague, “ they either did not bleed early enough, or too sparingly.” To those accustomed to see frequent cases of idiopathic gastritis, where the danger is seldom indicated fully by the pulse, the propriety of this practice will be at once obvious. In conjunction with

\* The first blood drawn in the fever seldom shewed any white glutinous covering or size, but after the second bleeding, this appearance was seldom absent ; though it was never thick or very tough. The crassamentum was bulky, flat, and smooth, and never rose into that cup-like or sand-box form which is common in cases of pneumonic inflammation.

with blood-letting, mercurial purges were found more certain in their effects and more serviceable than any other kind; especially when exhibited in doses of from six to twelve grains, and repeated every six or eight hours till a copious discharge by stool took place; and more especially when their operation was promoted by mild laxative enemas, administered three or four hours after each dose of the mercurial purge. Those who have not had an opportunity of observing the good effects of this practice, will perhaps think it a very hazardous one. But when they consider the difficulty of retaining the saline and less active purges on the stomach, and the very great difficulty of procuring copious evacuations by stool, without which the topical affection which obstructs the passage of the bile could not be removed, nor the propensity to puke relieved; they will change their sentiments; for, notwithstanding the inflamed and irritable state of those parts, calomel in large doses, passed the pybones, and occasioned

ed less irritation till it had reached the intestines, and was less liable to be cast up than any other purgative.

But, however preconceived theories might influence others, we who were not prejudiced in favour of any particular hypothesis, and who had daily opportunities of seeing its effects, not only in our own practice, but in that of others, are convinced that it was more certain in its operation, and in general as safe as any other.

In a few persons of delicate or infirm constitutions, indeed it proved injurious; and particularly when administered after the inflammatory symptoms had subsided. When it proved injurious before the inflammatory symptoms were removed, it appeared to have induced an inflammation in the intestines, and a very painful and troublesome tenesmus. And when it proved injurious in a later stage, it was in consequence of the debility occasioned

ed by its operation or the ptyalism, which too frequently succeeded the too frequent and injudicious exhibition of it. Unless speedy and decided measures are taken in this stage of the disease, all our future endeavours to remove it, will generally be ineffectual. And surely, in a disease which had foiled every method formerly employed, some innovation was justifiable. These cases, however, were very rare in comparison with those wherein it operated gently, and to good effect. As we never administered it when putrid symptoms were prevalent or the debility very great, or in any stage of the disease, but the first ; we cannot speak with any certainty of its effects, under any other circumstance or period.

We seldom had occasion, even in the first stage of the disease, when inflammatory symptoms were prevalent, to exhibit mercurial purges after copious evacuations were procured, but found those of a milder kind, such as sal. cath. crem. tart. or castor oil, generally sufficient

sufficient to keep the bowels in a laxative state, when the stomach would bear them, and when it would not, glisters made of an infusion of senæ leaves, manna and common salt, with the addition of a little oil, generally answered the purpose. We found the most difficult part in the treatment, consisted in putting the stomach in a condition to retain any thing; the saline draught in the act of effervescence, so useful for that purpose in other fevers, seldom produced any permanent effect in this; magnesia taken in a draught of sweetened water, seemed to have a better effect when immediately followed by a draught of acid beverage; but there was nothing so certain as a copious diarrhœa when it could be procured.\* When on the first or second day of  
the

\* If in any case, the patient recovered by the means recommended by the West India writers, and adopted by several, particularly by the French physicians who practised here during the prevalence of the disease, this fortunate even appears to have been more owing to a favourable state of the constitution, or to a lower degree of the disease, than to the efficacy of their feeble and imperfect method of treatment.

the disease the face was greatly flushed, the vessels of the tunica adnata very red and turgid, and the patient was affected with ferocious delirium, resembling that which occurs in phrenitis, he generally died in a short time, unless immediately and copiously blooded, purged and restricted to a cooling and abstemious regimen.

The antiphlogistic regimen was always found to agree better than that of the vinous or cordial kind ; not only while the pulse continued full and active, but when it was low and quick, previous to the accession of typhous symptoms. The patient was accordingly directed to drink toast and water, lemonade, tamarind-water, barley-water, and any other diluting, mild, sedative drink, that was grateful to the palate, and rested easiest on the stomach.

Fresh air was constantly admitted into the sick room, and cold vinegar and water frequently

quently sprinkled upon the floor. This was found much more refreshing than flashing gun-powder, or burning nitre and charcoal in the chamber ; as these latter, though they furnish a quantity of pure air, always increased its heat ; and thereby counterbalanced the good effects that might otherwise have been derived from them. The bed and body-linen were also directed to be changed every day, or every second day at farthest.

When a repetition of blood-letting during the first and second day of the complaint, did not remove the pain in the head and back, and the distress at the stomach, and when every thing was vomited up as soon as taken ; recourse was immediately had to purging clysters, and to the application of epispastics to the stomach and legs, or to the back and inside of the thighs : the latter method is preferred by Dr Hume of Jamaica, to any other ; from a supposition, that an inflammation raised on an inferior part, always relieves that subsift-

subfisting in a fuperior one. At present it is supposed to be owing to a change of action, from one part of the system to another.

Opium was also frequently employed in a solid form as directed by Hillary of Barbadoes, with a view of relieving the vomiting ; but in general was found to aggravate it. The saline draught given in the act of effervescence, or magnesia as already mentioned, had a better effect, but was by no means certain : nor in fact was any thing else found to have any permanent effect on this symptom, except glysters, brisk purges, and blisters. But these when judiciously and early applied seldom failed of affording relief.

Baths of various kinds were occasionally employed, but seldom with such manifest effect as to induce us to say much in their favour, except washing the limbs with simple water of tepid warmth, to keep the skin soft, and take off stricture and resistance from the surface.

surface. When the topical affection of the stomach was relieved, a solution of Rochelle salts, in thin veal or fowl broth, with the addition of a little common marine salt, was in general more certain and less irritating than any other laxative. (A drachm of this salt requires about two ounces of boiling water to dissolve it perfectly.) The inflamed state of the stomach deterred us from employing emetics, or any antimonial preparations : but from the trials of others, we are convinced that they seldom were of service, but often the reverse. When purges produced copious, foetid and bilious stools early in the disease, it generally terminated favourably and speedily.

In the second stage of this fever, (which however, seldom took place when the remedies beforementioned were early and judiciously employed and duly persisted in), we found a very different treatment proper, from that which was necessary in the first stage ; for the inflammatory state now, for the most

part, rapidly verged towards gangrene ; and the muscular weakness was such as to render bleeding inadmissible ; and the irritable state of the stomach precluded all expectation from purgatives, as they were rejected as well as every thing else the instant they reached the stomach. Our only resource, therefore, was in warm antiseptic fomentations, applied by means of flannel cloths to the stomach, thighs, legs and hands, sinapisms to the feet, aromatic and essential oils, or spices stewed in brandy to the stomach ; or the application of blisters, and the frequent exhibition of laxative glisters ; and after a free evacuation, the injection of bark decoction, and a few drops of laudanum, with some farinaceous or mucilaginous liquor, into the intestines—(here perhaps, washing the patient's whole body with cold water, and afterwards wrapping it in a blanket wrung out of a hot decoction, and the subsequent application of blisters, would have been beneficial ; but we were afraid to try them). Vinous and cordial drinks as well

well as all kinds of aliment, invariably aggravated this symptom, and increased or produced the cardialgia ; but small draughts of cold water generally gave instant ease. When by these means the topical inflammation of the epigastric region was removed, all the symptoms gradually subsided, and the patient recovered. But when these means failed, and the black vomiting came on, accompanied with coldness, and a cadaverous appearance of the extremities, and a dark yellow and purple aspect of the countenance, our practice was to employ a strong decoction of peruvian bark—an infusion of camomile flowers, and toast and water lightly acidulated with the elixir of vitriol, and in some cases a mixture of brandy and water—and to direct glisters composed of a strong decoction of bark, with the addition of fifteen or twenty drops of laudanum, to be administered every two or three hours ; applying at the same time, sinapisms and jugs of hot water, to different parts of the patient's body. We also directed all the

drinks to be given in a tepid state. Hot spiced wine, wine and water, and various other liquors were often tried, but in general with such bad success, that we cannot recommend them in such circumstances. Hot brandy toddy, however, with the addition of a large quantity of powdered nutmeg, in conjunction with external heat and acrid stimulating applications, often had evident good effects.

When indeed the disease began with great prostration of strength, and other symptoms which denote a typhous diathesis, we found wine not only safe, but more useful than any other article. In these cases also, the early use of the bark in various forms, together with the liberal use of laudanum and volatile salts were of service ; but that which was most particularly so, was the shower-bath of salt-water, applied quite cold three times a day, the patient sitting in an arm chair, in a large tub for the purpose, his head being previously shaved or covered with a thin bathing cap of oiled cloth.

But

But after the accession of this stage, in which the black vomiting and coldness of the limbs were the most predominant symptoms, all attempts to relieve were generally ineffectual.\*

When

\* The principal aim to be kept in view in this state of the disease, is to recal and support the determination of the fluids to the surface. Death may be prevented, even after black-vomiting has appeared with all its terrors, if a remedy can be found powerful enough to excite the action of the extreme vessels, and to recal the determination from the internal parts, to the surface of the body. For this purpose, we are told by Dr Jackson, that he has employed alternately warm and cold bathing with success: he has even wrapped the body in a blanket, soaked in water, in which a large portion of salt was dissolved; or which had been steeped in hot brandy or rum; enjoining at the same time the liberal use of wine or any other grateful cordial, to be taken as warm as possible in small and repeated draughts. He also mentions having heard of several well-attested instances of persons being relieved of the black vomiting and their lives saved, by plentiful draughts of rum and water. In other cases he thinks washing the whole body first with cold water, and then wrapping it in the blankets steeped in hot brandy or rum, and giving warm cordial drinks answered still better. (See his Treatise, p. 226.) We found brandy and water and beef-tea rested better on many stomachs, and strengthened them more than any thing else, after the removal of fever and pain, and all the other symptoms except debility and dyspepsia.

When the disease did not appear to be confined more particularly to any one part of the system than another, but was universally diffused ; and when nervous symptoms with great prostration of strength, were conspicuously predominant, which was frequently the case during the greatest part of the month of August, the treatment recommended by Dr Edward Stephens, a physician of great repute at St Croix, was employed with more success than any other ; of which the following is an abstract. “ The nausea and vomiting may be relieved by an infusion of camomile flowers, given frequently until the stomach is sufficiently emptied of all crude matters. Small doses of a cordial mixture composed of the oil of peppermint and compound spirits of lavender, may then be taken until the sickness abates. If notwithstanding, the irritability of the stomach should continue, recourse must be instantly had to the cold bath, which must be used every two hours or oftener if the urgency of the symptoms should require it : after each

each immersion a glass of old Madeira or a little brandy burnt with cinnamon may be administered.

Flannel cloths wrung out of spirit of wine, impregnated with spices, may be applied to the pit of the stomach and changed frequently; An injection containing an ounce of powdered bark, mixed with thin salep or sago, to which a tea-spoon-full of laudanum has been added, should be administered. These injections may be continued every two or three hours, omitting the laudanum after the first—as soon as the stomach can bear medicines and nourishment, the bark may be administered in small doses—and as much madeira wine may be given as the patient can bear, without affecting his head or heating him too much. All emetics and violent cathartics should be avoided. If the bowels should not be sufficiently open, a laxative clyster may be necessary, or a few grains of powdered rhubarb added to each dose of bark, until the desired effect is produced.

produced. If diarrhœa should prevail, it must be checked by starch injections, blended with laudanum, by the tincture E. kino, Japonica, or a decoction of cascara ; for a diarrhœa, especially when profuse, is always injurious when the disease is in an advanced stage, or when the debility is great.

If stupor, coma, or delirium should come on, a large blister should be applied between the shoulders, small ones to the thighs, and stimulating cataplasms to the soles of the feet. When hemorrhages appear, the elixir of vitriol may be joined with the bark; but great care should be taken to prevent it from affecting the bowels.

If the pulse should be much funk, the prostration of strength great, and subsultus tendinum take place, small doses of the liquor mineralis Hoffmanni, or even vitriolic æther, diluted with water may be given. Musk and camphor in this situation, have also proved effectual,

effectual. Upon the whole this outline may be summed up under the recited circumstances, by saying that the cold bath, bark and wine, a spacious well ventilated room, frequent change of bed and body linen, and attention to rest, and quiet if properly persevered, is all that can be done with any prospect of success."

We were led with other physicians of this city, to make trial of mercurial purges in the early stage of this disease, from having observed their good effects in bilious remittents, when symptoms of accumulated bile were present; and are surprized that the West India practitioners never made trial of it in a disease, which the generality of them acknowledge is the most desperate and mortal to which mankind are liable, and which has heretofore baffled all their skill; especially as some of them imagine it to be only a higher grade of the bilious remittent, of tropical climates; and as mercurial cathartics are recommended occasionally

asionally for the removal of biliary accumulations, by several modern authors, particularly by Balfour, Blane and Clark. Dr. Williams indeed, (who published a treatise on the yellow fever at Jamaica in 1750), though he makes no mention of mercury, says he found jallap or scammony in doses of 20 or 30 grains, given after an antiemetic draught, and repeated as often as it was thrown up till it operated freely by stool, more effectual, not only in relieving the incessant propensity to puke at the beginning of the disease, but in mitigating every painful and febrile symptom, and adds that though he can adduce no modern authority in support of his practice, he can recommend it from his own experience. We can say the same of mercurial purges, with this addition, that when they operated copiously, which was generally the case when a laxative glyster was injected, a few hours after them, the vomiting or the propensity thereto became more moderate, and in many cases was entirely removed.

With

. With respect to blood-letting, there is much contrariety of sentiment among the West India physicians ; the generality of them restraining the operation to the first and second days, from the commencement of the disease, and to a very sparing quantity : whereas Dr. Moseley advises it without limitation, even ad deliquum, and a repetition so long as the pulse continues preternaturally quick, and the skin exhibits much feverish heat. And Williams advises opening the temporal artery, when the pain in the head is great, and the fever high. But though Moseley is of the same opinion with Williams, with respect to purging for relieving the irritability of the stomach, so long as the feverish heat is evident, without regarding the state of the pulse, he makes no mention of mercurial purges, but places his chief dependence on a solution of vitriolated tartar and emollient glysters ; and as soon as that is accomplished, has immediate recourse to the bark in various forms, as may be most grateful to the stomach.

Blane

Blane and Jackson have given a more accurate description of the disease, but Moseley certainly understood its nature and treatment better than either, though he may perhaps sometimes have carried his plan too far for the constitutions of the generality of citizens. For hardy athletic mariners we believe it was the best mode of treatment that was known at the time he practised in Jamaica.

OBSERVA-

O B S E R V A T I O N S  
O N T H E  
*O R I G I N A N D N A T U R E*  
O F T H E  
C O N T A G I O N.

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T H E R E is no disease on which the influence of climate and season is so conspicuous as on the yellow fever.

In the islands and countries within the tropics, where the disease is generated, the physicians who practice in those parts have no idea of its being contagious ; but because it rarely attacks the natives of that climate, and is confined to foreigners from a colder climate, they ascribe

ascribe it to the effects of fatigue and heat, exposure to night air, or to some irregularity, &c. Numerous observations however prove, that it is highly contagious when conveyed to other countries, especially in populous cities with close built streets, when the heat of the weather is equal to, or exceeds that of, tropical climates. For examples of this, the reader is referred to Lind on Hot Climates; to Lining's account of its several occurrences at Charleston, published in the 2d volume of the Physical and Literary Essays of Edinburgh; and to the history of its rise and progress as it lately appeared in Philadelphia, published by Mr Carey. Former observations also shew, that the contagion has always been so effectually destroyed by cold and frosty weather, that it has never been known to revive the following spring or summer.

As the contagious miasmata, or deleterious corpuscles of this contagion, or whatever else it may be supposed to consist of, is neither visible nor can be rendered cognizable to the

fenses by any means hitherto invented, we can only determine its existence and judge of its nature from its effects. And as the source from whence it is derived, and the means by which it is generated, have never been investigated or even suspected as we know of, we can only form a judgment of that circumstance from analogy, which at best is but a problematical guide.

The yellow fever, though it agrees with the typhus, jail or hospital fever, and the pestilence in being capable of affecting sound persons under certain circumstances, who happen to approach within a certain distance of its source, or of substances which have already been within that distance, and imbibed the contagious effluvia, differs materially from the former, in not being capable of producing any morbid effect in cold and frosty weather, unless the heat of the chamber where it may chance to lurk, be raised and continued for some hours above fifty or sixty degrees, or according

cording to the learned and observing Blane, 75 degrees—and from the latter in not losing its power, and declining as the heats of summer, in countries where they are very hot come to the height, as well as by the cold of winter—and from both in the manner of its attack, and the appearance of the symptoms in the progress of the disease. And though it resembles the influenza in the suddenness of attack, it differs from it materially in the facility of communication, the rapidity of its progress, and the extensiveness of its sway—the one being confined to cities, and taking some months to finish its progress—the other spreading over whole continents, in the course of as many weeks.

Nor does it agree in its effects with the miasmata, which arise from putrefying substances, or from a marshy soil in any one circumstance, except being extinguished by cold and frosty, and perhaps rainy weather.\* For the miasmata

\* See remarks on this subject, published in the Federal Gazette

miasmata of marshes, are diffused through the atmosphere to a considerable distance from their source, and affect numbers at the same time, and the diseases produced thereby, are not contagious; whereas the miasmata which occasion the yellow fever, are confined to a very narrow sphere, and only affect those that happen to come within that sphere, or in contact with, or near to such persons, or such substances as have been within that sphere, so as to receive the contagious effluvia; and the disease produced by these miasmata is contagious, and propagated in succession from one to another, in proportion as there is more or less intercourse between the sound and the sick, provided a state of the atmosphere, with respect to heat and some other circumstances, exist at the same time favourable for propagating the contagion. What these circumstances are, will be mentioned in the sequel. But if this disease is neither a modification of the

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pestilence

Gazette, dated November 18th, and Dunlap's American Advertiser, December 20th, 1793.

pestilence—the typhus—the influenza—or a higher grade of the bilious remittent fever.—What is it? From what source does it originate, or by what means is it generated? That it originates within the tropics, and seldom if ever in any other climate is generally admitted—but from what source or how generated, is the question.

It is well known to every one conversant with medical subjects, that other contagious miasmata are frequently generated in close crowded or unventilated places, particularly in jails, hospitals and ships of war, unless the body and bed clothes are frequently changed and kept clean, and the air frequently renewed, in consequence of the effluvia constantly issuing from the lungs and pores of the skin, at the same time that a portion of the pure and vivifying principle of the air, is gradually exhausted by the same circumstance. It is also a fact well established, that persons thus circumstanced, frequently communicate

municate a disease to those who chance to come into the same place, or in contact with such substances as have been within a certain distance of them, so as to imbibe a quantity of the effluvia issuing from them, especially when rendered volatile by heat, without being in any apparent degree affected in their health themselves.\*

May not the contagion of the yellow fever therefore be generated in the dirty, confined, and suffocating cabins of the unfortunate slaves, (who are deprived of the means as well as the relish for cleanliness and agreeable appearance, which actuates the minds of independent free-men), exalted into a pestilential quality by long continued heat ; and may not the constitutions of the inhabitants from the same cause, in conjunction with the purity of the air from constant ventilation, be rendered incapable of

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being

\* For examples of this the reader is requested to consult the works of Pringle, Lind and Blane, writers deservedly of the highest authority in medicine.

being affected by it; while strangers, whose constitutions are differently disposed, seldom escape?

The putrefaction of dead animal matter can, have no share in generating the disease, as it gives out nothing but a little hydrogen or inflammable air different from vegetable substances in that process.

To suppose with Drs Warren and Desportes that the contagion by which the disease is produced and propagated, was first introduced into the Islands by a crew of sick persons that arrived there about the year 1730, from Siam in the East Indies; and that it has been fostered there ever since, as the small pox has been in other countries, would have some appearance of plausibility, if like that disease it made no distinction between natives and foreigners; and a greater or less number of the inhabitants were always affected by it: but as that is not the case, such an opinion must be ground-

groundless. - For instead of affecting the natives, it is almost entirely confined to mariners from long voyages, and foul and crowded ships ; and to soldiers confined in hospitals, or crowded together in huts or barracks. And when it happens to be conveyed to other countries, its influence is entirely exerted upon the inhabitants of cities ; and is observed to be most contagious in those parts where the air is most confined and impure—when the days are very hot and the nights cool. Hence it appears, that in order to give effect to the contagion of this fever, it is necessary that there should be a certain constitution of the air, in conjunction with great heat.

Let us therefore enquire into the circumstances which give this morbific constitution to the atmosphere, that if the contagion should ever be introduced here again, we may not only escape its effects by retreating into the country, but if possible, disarm it of its power, and prevent it from spreading, and affecting those who remain in the city.

That

That all contagious diseases receive their full force from a particular constitution or condition of the atmosphere, appears certain, from a multiplicity of concurring observations made by different authors at different periods and in different countries. In what this particular constitution of the atmosphere consists, which in one year and in the same situation favours the spreading of contagion, and in another year in the same season and in the same place, checks or extinguishes it, has been variously explained by different writers : but as no explanation hitherto attempted is perfectly satisfactory, we beg leave to offer one which we think less exceptionable.\*

During a long continuance of dry and hot weather, the atmosphere becomes more or less charged with exhalations from various sources, in proportion to the moisture of the soil, &c, which are more or less injurious to health, in

\* See on this subject particularly the works of Sydenham, Russel, and Lind.

in proportion to the quantity of animal and vegetable substances in a state of putrefaction, which cover or are mixed with the soil, the respiration of animals, the combustion of fuel, &c. while it is at the same time robbed by these processes of a considerable portion of its vivifying principle, at present known by the name of oxygen gas, or pure air.. It is certain that the air is saturated by some other substance, or deprived of a portion of its vivifying principle by some means or other ; otherwise we know from the most unquestionable observations, that it would always neutralize, correct, dissipate, or precipitate the matter of contagion, however minute and subtle the corpuscles may be of which it consists. For it is well known that no contagious disease can spread, or become epidemic, on mountains, or on open and extensive plains, where the soil is dry, cleared, and cultivated ; whereas it is with difficulty it can be prevented in populous cities, with close built streets and narrow alleys, or in low champaign countries, where ventilation is obstructed by surrounding woods.

In

In populous cities in sultry weather the exhalations, from the vaults, privies, sinks, sewers, gutters, shambles, slaughter-houses, tan-yards, from respiration, and the combustion of fuel, and a variety of other processes of nature and art, are inconceivably great. Nor can such exhalations fail of filling the air with a noxious mass of invisible corpuscles ; at the same time that the process by which they are generated spoliates the same atmosphere of a principle, on the presence of which, both life and flame depend for their continuance.

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“ It is not air  
 That from a thousand lungs reeks back to thine,  
 Sated with exhalations rank and fell,  
 The spoil of dunghills, and the putrid thaw  
 Of nature ; when from shape and texture, she  
 Relapses into fighting elements :  
 It is not air, but floats a nauseous mass  
 Of all obscene, corrupt, offensive things ;  
 Which still ranker grows with sickly rest,  
 And poisons the balsamic blood.”

*ARMSTRONG on Health.*

MEANS

M E A N S

FOR PREVENTING THE INTRODUCTION OF

C O N T A G I O N

I N T O

S E A - P O R T T O W N S.

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**T**H E most effectual means of preventing the introduction of contagious diseases into any sea-port town, is to erect at a convenient distance therefrom, four separate hospitals, with large airy apartments. One of these hospitals to be appropriated for persons with dubious symptoms. A second for persons manifestly infected. A third for convalescents from the disease. A fourth for purifying the body, the wearing apparel, and bed clothes:

this

this last should be provided with bathing tubs, and materials for fumigating. A bathing chamber and fresh clean apparel should also be provided near to each hospital, for each patient, before his admission into either ; except his weakness or fever should make the bath hazardous. Each apartment should be separated by means of a partition, to prevent any effect from each other ; and should have windows that will both slide up and down, for the admission of fresh, and expulsion of foul, air. (For the manner of constructing these, see Mackiterick's Medical cautions.)

These hospitals should be at some distance from each other, on as elevated and dry a situation as can be conveniently found. When a suspected ship arrives, the whole crew should be compelled by law to perform quarantine for 14 days at least ; the sound to remain on board ; the sick or indisposed in a marine hospital or infirmary. By this it would be ascertained with certainty, whether there was contagion on board or not.

M E A N S

FOR PREVENTING THE SPREADING OF

# CONTAGIOUS DISEASES,

WHEN THEY HAPPEN TO BE INTRODUCED INTO A

T R O D U C E D I N T O A

# C I T Y.

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WHEN a contagious disease breaks out in a city, the most certain means of preventing it from becoming epidemic, or from spreading, is to prohibit all intercourse between the sound and the infected; and to commit the diseased to the care of persons commissioned for that purpose. As soon therefore, as the disease appears in any family, both the sound and the sick should be immediately separated and removed to other apartments, at some distance from the town, and

and a considerable distance from each other, and the house where the disease appeared should immediately be purified by the means hereafter directed.

Infirmaries for this purpose should be built at the public expence, on dry and elevated situations, particularly on the high and gravelly banks of rivers or constant streams of water, open on all sides to the free access of the air, provided with every necessary, and supported at the public expence. But persons in affluent circumstances though compelled to leave the city, should be allowed to retire to private infirmaries at their own expence, provided they conformed to the rules of the public infirmaries, in every other respect.

Every family in the neighbourhood where the infection prevailed, should also be obliged under a heavy penalty, to remove to another part till all danger from contagion be over; and no person be permitted to return to an infected

infected house, or to use any article where the contagion existed, till purified by the means hereafter directed. Nor should any person who has recovered from the disease be permitted to return to the city, or to his own house, till he has after such recovery, repeatedly undergone the ablution of both the warm and cold bath, changed every article of his cloathing, and performed a quarantine of at least 14 days, so as to render his return perfectly safe to the community.

If proper attention had been paid to these directions, which have been collected from the most respectable sources ; and the substance of which was earnestly advised by the college of physicians, the calamity by which all descriptions in this city so lately suffered, would have been prevented. And that a strict and punctual observance thereof in future, will prevent the like calamity, we are as certain as we are of any axiom in natural philosophy.

In a letter from Dr Waterhouse, the present respectable professor of the theory and practice of medicine in the university of Cambridge, Massachusetts, dated September 28th, 1778, we find the following information respecting the means which have been found effectual for preventing the small pox from spreading among the inhabitants of Newport, the capital of Rhode-Island, when it happened to be introduced there, by means of any vessel ; and will apply equally well in preventing any other contagious disease from becoming epidemic.

“ When a vessel arrives in the harbour with the small pox on board, every person with the disease is immediately taken by officers appointed for the purpose, to Coaster’s harbour, a little island about three miles from Newport, where there is an hospital and every necessary provided for their reception and accomodation. And the vessel having a jack hoisted in her shrouds, is obliged to perform quarantine.

“ None

" None of the bedding or wearing apparel made use of by the patients during their stay at the hospital, are permitted to be brought away ; nor are the patients who recover from the disease, allowed to leave the hospital, till they have undergone several ablutions in warm water, and till at least one week has elapsed after their recovery, let the disease be ever so light.

" When any person in the town is suspected of having taken the infection, the family is obliged, under a heavy penalty, to give immediate notice to one or more inspectors. If these, in conjunction with a physician, pronounce the disease to be the small pox, the family has little more to do with the patient ; but he is from that time to the termination of the disease, wholly under the direction of these officers, who remove him to Coaster's harbour. Formerly they carried the sick person on a sleigh in a box in form of a large chest, with a small bed in it ; the cover of which was perforated with holes sufficient to supply the patient

tient with air. But the inhabitants perceiving that this formidable apparatus had all ill effect on timorous minds, discontinued the box, and substituted a sedan chair. It has happened more than once, that the disease was so far advanced before it was known to be the small pox, that the patient could not be removed without the greatest hazard. In that case the street was boarded up ; an advertisement published in the news-papers, and guards placed to prevent any person from approaching within a certain distance of the house."

## M E A N S

FOR DESTROYING

## C O N T A G I O N.

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**H**EAT, fumigation and lime-washing appear to be the most effectual means of destroying the contagion adhering to the walls, floors, and

and furniture of houses, and to bedding, wearing apparel, and to other materials which have been exposed to it.

For this purpose the bedding and wearing apparel being hung on lines across the room, iron pots placed on bricks in the centre, and at each corner of the chamber or apartment should be nearly filled with alternate layers of powdered sulphur or nitre, and charcoal ; and a piece of oakum dipt in tar, to serve as a match, being placed in each pot, the fire-place being previously closed, and the windows shut down, is to be set on fire, and then the door to be shut ; observing to let in fresh air occasionally, and to relight them when extinguished ; but cautiously avoiding going in till the door and windows have been for some time opened to prevent suffocation.

When this process has been continued for three or four days, the door, windows, and chimney are to be opened, and left open day and

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night

night for at least a fortnight. By this time every particle of contagion will be perfectly extinguished, especially if the air of the room had been greatly heated immediately before the admission of fresh air: for by great heat it is attenuated and dissipated, and by cooler and pure air entirely changed in its nature and qualities, if there is any faith to be put in the experiments of the committee of physicians appointed by the empress of Russia, to superintend the hospitals, when a pestilential fever prevailed at Moscow in the year 1771, related by Mertens in his medical history of that disease: or if the observations of the experienced Lind, and the intelligent Ruffel, are to be credited.

For greater security, the walls of the house where infected persons have lain, should always be white-washed with lime, and a quantity of the same article should be thrown into the privies, as it is a certain corrector of contagion and putrefaction, as well as destructive to every species of animalcule.

## A P P E N D I X.

*Copy of the report of the College of Physicians,  
in answer to the Governor's enquiries, respecting  
the origin of the late epidemic; and  
their directions for extinguishing latent infection.*

SIR,

IT has not been from a want of respect to yourself, nor from inattention to the subject, that your letter of the 30th ult. was not sooner answered; but the importance of the questions proposed, has made it necessary for us to devote a considerable portion of time and attention to the subject, in order to arrive at a safe and just conclusion.

No instance has ever occurred of the disease, called the *Yellow Fever*, having been generated in this city, or in any other part of the United States, as far as we know; but there have been frequent instances of its having been imported, not only into this, but into

into other parts of North America, and prevailing there for a certain period of time ; and from the rise, progress, and nature of the malignant fever, which began to prevail here about the beginning of last August, and extended itself gradually over a great part of the city ; we are of opinion that this disease was imported into Philadelphia, by some of the vessels which arrived in the port after the middle of July. This opinion we are further confirmed in, by the various accounts we have received from unquestionable authorities.

#### TO PURIFY THE CITY FROM LATENT INFECTION,

WE beg leave to recommend, that every house, particularly those in which there have been any sick, should be thoroughly cleansed and kept open for some weeks, so as to admit fresh air through every aperture. The walls should be white-washed, and gun-powder burned in all the apartments. The beds and

and woollen apparel of the infected, should either be destroyed or smoaked with gun-powder in a close room, and afterwards expos'd to the open air and rain. Unslaked lime should be thrown down the necessaries; the streets should also be kept clean, especially in the confined parts of the city.

In answer to your last question, permit us to observe, that we trust the early attention of the legislature will be directed to the port, with respect to the officers and other necessary arrangements, and on such an occasion the College will ever cheerfully co-operate with them, in their endeavours to prevent the introduction of contagious maladies in future.

*By order of the College of Physicians.*

JOHN REDMAN, *President.*

NOVEMBER 26th, 1793.



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